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**BY FACSIMILE AND FEDERAL EXPRESS**

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Re: Metcoa Site Administrative Proceeding

Dear Catherine and Kathleen:

As we agreed last week, enclosed please find a paper discussing issues relating to application of the response standard for thorium at the Metcoa Site.

Please feel free to call us if you have questions or would like to discuss these issues. We look forward to seeing you in Philadelphia on Friday.

Sincerely,

*Laura B. Ahearn /JRW*  
Laura B. Ahearn

cc: Mr. Jeffrey A. Dodd

AR100357

## **INTRODUCTION**

Region III of the U.S. Environmental Protection Agency ("EPA") reportedly is preparing an Engineering Evaluation/Cost Analysis ("EE/CA") assessing possible future removal response action at the Metcoa Restart Site, located in Pulaski, Pennsylvania. The EE/CA will evaluate, among other things, whether any further response action is necessary to address the presence of thorium in soils at the Metcoa Site.

This paper addresses issues relating to EPA's approval and implementation of the response standard for thorium at the Metcoa Site. Following a brief historical overview, Section II of the paper discusses the standard for thorium originally approved by EPA. Section III describes the additional standards proposed by EPA in recent meetings held on July 21 and August 8, 1995. Section IV concludes with an analysis of the bases presented for these new proposals, in light of the criteria for establishing response standards under CERCLA. An index of relevant authorities and guidance is attached as Appendix A.

### **I. HISTORICAL OVERVIEW: USE AND DISPOSAL OF THORIATED MATERIALS AT THE METCOA SITE**

Treatment, storage, and processing of thoriated materials at the Metcoa Site was expressly authorized by the U.S. Nuclear Regulatory Commission ("NRC"), which issued to The Pesses Company a Source Material License, No. STB-1254, on September 23, 1975. The license was amended on June 22, 1978, at which time NRC approved the "disposal of licensed material by burial in soil." NRC subsequently further amended the license on June 17, 1982, ultimately authorizing processing of a total amount of up to 100,000 kilograms of materials, containing 2,000 kilograms thorium, at the Metcoa Site.

NRC's licensing decisions recognized that burial of thoriated materials did not present undue risks to industrial workers, and conversely that the Metcoa Site would continue to be classified as a "restricted use" property to avoid risks under other land use scenarios. These land use assumptions are fully consistent with those presently employed by EPA in evaluating response action levels for other metals of concern at the Site.

NRC and EPA assessed potential risks posed by thorium at the Metcoa Site on a number of occasions in the 1980's. As of June 17, 1982, NRC stated that exposure resulting from thoriated materials stored on-site was "minimal to the work force or the general public." Docket No. 40-8406, Amendment to STB-1254. In September 1986, EPA stated in its "Radiological Safety Plan for the Decontamination of [the Metcoa Site]" that "the radiation hazard associated with this site is probably not sufficient in and of itself to motivate a cleanup effort."

AR100358

**METCOA SITE ADMINISTRATIVE PROCEEDING:  
ISSUES RELATING TO APPLICATION OF  
RESPONSE STANDARD FOR THORIUM**

**Presented to:**

**U.S. Environmental Protection Agency  
Region III  
Philadelphia, Pennsylvania**

**Prepared by the Metcoa Response Group**

**August 23, 1995**

**AR100359**

However, the issue of thorium standards was revisited by EPA in its Unilateral Administrative Order dated August 17, 1990, which required, among other things, that the respondents prepare a Management Options and Analysis Report ("MO/AR") evaluating potential response action goals for certain metals at the Site, including thorium. Work performed under that Order, which in relevant part was accepted without qualification and which subsequently has been reaffirmed by the Agency, determined the response standard for thorium.

## **II. IMPLEMENTATION OF EPA'S APPROVED RESPONSE STANDARD FOR THORIUM**

The Response Group's<sup>1/</sup> position is that the response standard for thorium at the Metcoa Site has previously been established by EPA. This standard is 10 pCi/g of thorium in soils, pursuant to NRC's Branch Technical Position on Disposal or Onsite Storage of Thorium or Uranium Wastes from Past Operations, 46 Fed. Reg. 52061 (Oct. 23, 1981) (the "1981 BTP").

The final MO/AR, dated May 8, 1992, recommended that the 1981 BTP Option 1 standard of 10 pCi/g thorium in soils be used as a response action objective in addressing thorium at the Metcoa Site. By letter dated August 11, 1992, from Ms. Carol Manning to Mr. Mark Travers, EPA formally approved the MO/AR. On November 18, 1994, EPA again confirmed that "[t]horium is the radioactive constituent of concern at the Site for which a cleanup level of 10 pCi/g has already been approved by EPA" in a letter from Mr. Jeffrey A. Dodd to Mr. Wayne Barto, constituting EPA's final, formal comments on Response Action Plan No. 1 submitted pursuant to EPA's 1994 Unilateral Administrative Order.

In June 1995, ENVIRON Corporation, an environmental consulting firm retained by members of the Response Group, reviewed the extensive data previously collected at the Metcoa Site to determine what, if any, response action might be required under the established 10 pCi/g standard for thorium. As explained in materials presented to EPA by ENVIRON on July 6, 1995, the 95% upper confidence level on the mean ("95%

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<sup>1/</sup> For purposes of this paper, the "Response Group" consists of Aerospace Metals, Inc., AVCO Corporation, Climax Performance Materials Corporation, Dana Corporation, Flowline Corporation, Gould Electronics Inc. on behalf of Gould Inc., Motorola, Inc., Sherritt Inc., and Union Carbide Corporation through Eveready Battery Company, Inc.

UCLM") value for thorium data at the Metcoa Site is approximately 9.2 pCi/g.<sup>2/</sup> Accordingly, no response action is necessary to meet the approved response level.

The 10 pCi/g standard under the 1981 BTP should be applied as a site-wide average, for at least three reasons. First, the standard itself was established to provide a cut-off, below which unlimited on-site disposal of radioactive materials is permitted. Under the 1981 BTP, a licensee potentially could dispose of materials at or below the 10 pCi/g limit throughout its facility. See Enclosure No. 2 to the October 5, 1981 Background Memorandum to the 1981 BTP, NRC SECY #81-576 ("BTP Background Memo"). Second, the various options set out in the 1981 BTP are to be applied as "average" concentrations, as explicitly stated with respect to Options 2 and 4. See 46 Fed. Reg. at 52062, 52063. There is no basis for applying Option 1 differently from Options 2 and 4, and in fact, the table summarizing "maximum concentrations" under the BTP does not distinguish them. See Enclosure No. 2 to the BTP Background Memo at 3. Subsequently issued NRC guidance reiterates that the various options are to be applied identically as average maximum concentrations. See NRC Memorandum: Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source or Special Nuclear Material (July 1982) at C-5. Finally, implementation of Option 1 as a site-wide average is consistent with the purpose of the 1981 BTP, which was to address potential long term cancer risks to individuals. The only remaining issue relating to implementation of the 10 pCi/g standard would be whether the site average should be calculated as a straight arithmetic mean or whether use of a 95% UCLM is justified. In either event, however, analysis of the appropriate data set at the Metcoa Site indicates that no further response action is required.

### **III. EPA'S RECENTLY PROPOSED NEW APPROACHES TO THORIUM AT THE METCOA SITE**

In a meeting held on July 21, 1995, EPA responded to ENVIRON's analyses by proposing a number of additional response standards relating to thorium, as part of a new "five-step" approach. Our understanding of EPA's July 21 proposal, which we subsequently reviewed with EPA and NRC officials in our meeting on August 8, 1995, is as follows:

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<sup>2/</sup> As noted in the materials distributed by ENVIRON on July 6, this calculation was preliminary in nature, based on conservative assumptions regarding the thorium at the site. The actual 95% UCLM therefore may be significantly lower than 9.2 pCi/g. This value was calculated using an assumed normal distribution for thorium data. Subsequent statistical analyses were conducted which concluded that the thorium data at the Metcoa Site do not fit a log-normal distribution. Therefore, use of a normal distribution in calculating the 95% UCLM was appropriate.

1. In addition to a standard for thorium, apply a separate upper-bound standard for gamma radiation of twice background. (Background has been determined to be 10 micro-R per hour.) The basis for this standard is a generalized assumption as to the range of error and lack of sensitivity in radiation detection instrumentation.
2. Also apply a separate upper-bound standard for thorium of three times the applicable standard above background. This step reportedly was conceived in reliance on NUREG/CR-5849, "Draft Report for Comment: Manual for Conducting Radiological Surveys in Support of License Termination," dated July 28, 1992 (the "1992 Draft Radiological Survey Manual").
3. Divide the site into 100 square meter (m<sup>2</sup>) grids for determining compliance, again looking to the 1992 Draft Radiological Survey Manual.
4. Test compliance with the previously established response standard (Option 1 from the 1981 BTP):
  - a. compare the average (arithmetic mean) of thorium concentrations over 100 m<sup>2</sup> areas with the response standard of 10 pCi/g thorium over background (the U.S. Geological Survey has determined that background for thorium is 1.4 pCi/g in this part of the United States);
  - b. compare the site-wide thorium 95% UCLM with the response standard of 10 pCi/g over background.
5. Conduct confirmatory gamma reading analysis for each area and for the site as a whole.

In the meeting held on August 8, 1995, after discussion of a number of issues which are further described below, EPA representatives stated that its primary concern regarding thorium at the Metcoa Site is in connection with perceived "hot-spots" -- areas where sampling has indicated elevated levels of thorium in soils. To address this concern, EPA said that it would request that Mr. Mark Roberts of NRC evaluate another possible approach to response action for thorium, as follows:

1. Implement limited removal of thoriated materials at locations where past sampling has indicated levels of thorium in excess of 30 pCi/g in soils.

2. Following initial removal, recalculate average thorium over 100 m<sup>2</sup> areas to determine compliance with 10 pCi/g 1981 BTP standard.
3. Conduct localized gamma readings to confirm that "hot-spots" have been successfully removed.

#### IV. EVALUATION OF EPA'S NEW APPROACHES

As the Response Group explained on August 8, EPA's newly proposed approaches to the selection and application of response standards for thorium would not be appropriate, for two principal reasons:

First, EPA's proposed separate upper-bound standard for gamma radiation is not based on any applicable or relevant and appropriate requirement ("ARAR") as defined under CERCLA. See EPA CERCLA Compliance with Other Laws Manual: Interim Final, August 1988 ("EPA ARARs Guidance") at 1-65 through 1-68.<sup>3/</sup> Rather, as confirmed by Mr. Mark Roberts of NRC at the August 8 meeting, the separate gamma standard reflects a general, technology-based, "rule-of-thumb" approach which in essence would require response at all areas where gamma over background can be detected. The new gamma standard is not based on any existing regulatory requirement, and is not related to any identified foreseeable health risk in light of future site uses. Accordingly, imposition of this standard by EPA would be inconsistent with § 121(d) of CERCLA, 42 U.S.C. § 9621(d).

Second, EPA's proposed upper-bound standard for thorium and use of the 100 m<sup>2</sup> averaging area also are not ARARs. The 1992 Draft Radiological Survey Manual upon which these are based is a "draft manual for comment," which "does not constitute formal guidance from the NRC." 57 Fed. Reg. 33374 (July 28, 1992) (emphasis added). EPA acknowledges that the NRC has no intention of even finalizing this guidance, and has provided no information on what comments NRC has received on this draft, what deficiencies and errors have been pointed out, and how NRC would propose to correct them. The Response Group renews its request for information on whether and how EPA has investigated and considered these matters.

The purpose of the 1992 Draft Radiological Survey Manual was to describe survey methodologies, not to create or provide guidance for setting new response standards. In addition, the 1992 Draft Radiological Survey Manual was intended to establish procedures

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<sup>3/</sup> EPA acknowledges that the requirements of § 121 of CERCLA "generally apply as a matter of law only to remedial actions." EPA ARARs Guidance at xii. As a matter of policy, as opposed to law, EPA seeks to attain ARARs where practicable in carrying out removal actions. *Id.* (emphasis added).

to allow the unrestricted release of NRC-licensed sites. It is inherent in EPA's general approach that the Metcoa Site will be subject to deed restrictions and/or other institutional controls after completion of response action. Therefore, potential "requirements" taken from the 1992 Draft Radiological Survey Manual are neither relevant nor appropriate.<sup>4/</sup>

EPA and NRC personnel have indicated that the Response Group should be aware of the NRC Radiological Criteria for Decommissioning proposed rule, 59 Fed. Reg. 43200 (Aug. 22, 1994). If finalized soon, EPA and NRC have indicated that this rule could result in imposition of more stringent cleanup standards for radioactive sites. By notice published on August 7, 1995, however, NRC announced that any action on the proposed rule would be delayed until at least early 1996, to allow full consideration of the voluminous comments submitted. 60 Fed. Reg. 40117. In an unusual statement of "Separate Views," NRC Commissioner de Planque stated in concurring with the decision to extend the rulemaking that the NRC should carefully consider two important issues not previously identified: (1) the extent to which NRC's proposed standard would be overly stringent and inconsistent with the recommendations of international and national radiological organizations, raising the need for a cost/benefit analysis, and (2) whether the underlying assumptions used by NRC in its exposure models are realistic and appropriate. *Id.* at 40118.

The proposed decommissioning regulations are pertinent in one respect: They would explicitly authorize the use of institutional controls, including deed restrictions or government ownership of the property, to reduce risks posed by thorium. *See* 59 Fed. Reg. 43225, 43229. The concept of "restricted release" under the NRC proposed rule involves use of institutional controls directly analogous to those available to EPA under CERCLA. *Compare* OSWER Dir. No. 9355.7-04, Land Use in the CERCLA Remedy Selection Process (May 25, 1995) at 10.

Where such institutional controls are implemented, the NRC's draft criteria would allow residual radiation activity levels prior to implementation of institutional controls to be more than six times the criteria for unrestricted use. *See* 59 Fed. Reg. at 43230 (proposed 10 C.F.R. § 20.1405(d)). Institutional controls that will be imposed at the Metcoa Site to address risks posed by non-radioactive metals would justify a similar increase

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<sup>4/</sup> For the same reasons, the 1992 Draft Radiological Survey Manual also should not be classified as a "to-be-considered" standard ("TBC"). EPA's ARAR Guidance states that EPA's policy is to attain "ARARs (and TBCs necessary for protection) pertaining either to contaminant levels or to performance of design standards . . ." *Id.* at 1-8 (emphasis added). Because future uses of the Metcoa Site will be restricted, any additional response standards based on assumptions of unrestricted release are not "necessary for protection" and therefore should not be "TBCs."



in the thorium response standard, and provide further assurance that compliance with a site-wide average of 10 pCi/g thorium in soils will ensure that any remaining risks are within acceptable limits.

The EPA and NRC also made statements in the July 21 and August 8 meetings to the effect that the separate gamma standard and application of the 1992 Draft Radiological Survey Manual could possibly be enforced directly by the NRC, as the NRC license for the Metcoa Site reportedly has not been "terminated." Our research has not revealed any authority or precedent for direct NRC enforcement against parties that did not own or operate a licensed site and were not related in way to the licensee. If EPA is aware of any such authority, please let us know.

## **CONCLUSION**

For all of the reasons stated above, the Response Group does not believe that major elements of the approaches recently suggested by EPA are supportable as application of ARARs under CERCLA. We understand that EPA and NRC will be meeting to discuss these issues on August 24. If EPA is able to report to the Response Group the results of those discussions prior to our meeting scheduled for August 25 in Philadelphia, this would assist us in our preparations. We look forward to further discussing these issues with the agencies at the August 25 meeting.

## APPENDIX A

EPA OSWER Dir. No. 9355.7-04, *Land Use in the CERCLA Remedy Selection Process*, May 25, 1995.

EPA OSWER Dir. No. 9234.1, *CERCLA Compliance with Other Laws Manual: Interim Final*, August 1988

*NRC Branch Technical Position on Disposal or Onsite Storage of Thorium or Uranium Wastes from Past Operations*, 46 Fed. Reg. 52061 (October 23, 1981)

*NRC Background Memorandum on the 1981 BTP*, NRC SECY #81-576, October 5, 1981

*NRC Memorandum: Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source or Special Nuclear Material*, NRC July 1982

*NRC Draft Report for Comment: Manual for Conducting Radiological Surveys in Support of License Termination*, NUREG/CR-5849, July 28, 1992

NRC Notice of Availability of NUREG/CR-5849, 57 Fed. Reg. 33374 (July 28, 1992)

Proposed rule: *NRC Radiological Criteria for Decommissioning*, 59 Fed. Reg. 43200 (Aug. 22, 1994)

NRC Notice of Extension in Schedule, *Radiological Criteria for Decommissioning Proposed Rule*, 60 Fed. Reg. 40117 (Aug. 7, 1995).